

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------|
| Applicant's or agent's file reference<br><b>P18219WO</b>                                                                            | <b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416                 |                                |
| International application No.<br><b>PCT/SE2003/001316</b>                                                                           | International filing date (day/month/year)<br><b>26/08/2003</b> | Priority date (day/month/year) |
| International Patent Classification (IPC) or national classification and IPC<br><b>H04Q 7/38, H04L 29/06, H04L 12/56, H04Q 7/32</b> |                                                                 |                                |
| Applicant<br><b>Telefonaktiebolaget LM Ericsson (publ) et al</b>                                                                    |                                                                 |                                |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ (sent to the applicant and to the International Bureau) a total of 9 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |                                     |              |                                                                                                                                                                 |
|-------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report                                                                                                                                             |
| <input type="checkbox"/>            | Box No. II   | Priority                                                                                                                                                        |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability                                                                |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention                                                                                                                                      |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited                                                                                                                                         |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application                                                                                                                |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application                                                                                                           |

|                                                                                                                                               |                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Date of submission of the demand<br><br><b>01-03-2005</b>                                                                                     | Date of completion of this report<br><br><b>24-10-2005</b>                       |
| Name and mailing address of the IPEA/SE<br>Patent- och registreringsverket<br>Box 5055<br>S-102 42 STOCKHOLM<br>Facsimile No. +46 8 667 72 88 | Authorized officer<br><br><b>Nabil Sebaa/MN</b><br>Telephone No. +46 8 782 25 00 |

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/001316

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☐ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1 - 28 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages\* 29 - 37 received by this Authority on 25/07/2005
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages 1 - 9 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/001316

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

|                               |        |             |     |
|-------------------------------|--------|-------------|-----|
| Novelty (N)                   | Claims | <u>1-34</u> | YES |
|                               | Claims |             | NO  |
| Inventive step (IS)           | Claims | <u>1-34</u> | YES |
|                               | Claims |             | NO  |
| Industrial applicability (IA) | Claims | <u>1-34</u> | YES |
|                               | Claims |             | NO  |

## 2. Citations and explanations (Rule 70.7)

The invention concerns a device, user equipment, and entities for authenticating a user equipment accessing a multimedia network through an access network where the user had already been authenticated.

The problem to be solve by the invention relates to extra signalling required as well as extra load added on a multimedia network, when an additional authentication is required as a user wants to get access to the multimedia domain.

The object of the invention is to provide an inter-domain authentication mechanism carrying out a cross-domain authentication for a given user between an access network domain and a multimedia domain being simpler and applicable where a user authentication has been carried out by the access network.

Documents cited in the International Search Report:

D1: "Access security for IP-based services (Release 5)" 3RD GENERATION PARTNERSHIP PROJECT; TECHNICAL SPECIFICATION GROUP SERVICES AND SYSTEM ASPECTS; 3GPP TS 33.203 V5.6.0 (2003-06)

D2: WO03056781 A

D3: US2003159067 A1

D4: WO02091785 A

D5: US2001031635 A

Document D1 is considered to represent the closest prior art. D1 describes a device (S-CSCF) for multimedia authentication of a user equipment in a multimedia domain through an access

.../...

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of: BOX V

network (UMTS) (see section 6.1 in D1). According to D1, registration/authentication of a user equipment by the S-CSCF must be performed prior to the user to get access to a multimedia service.

The invention according to new independent claims 1, 15, 23 filed with the letter of 25/07/2005 differs from the device/method/apparatus in D1 in that a step is performed to decide that an implicit authentication between the user and the IMS domain can take place based on a previous authentication of the user by the network, thus skipping the needs for an explicit authentication, which explicit authentication is a requirement in D1.

Therefore, the invention according to new claims 1-34 satisfies the requirements of novelty, inventive step and industrial applicability.

Additional documents D2-D5 are considered to represent the general state of the art, and the invention according to claims 1-34 is not disclosed by any of those documents.

**CLAIMS**

1. A device for Multimedia authentication of a user (UE) accessing a Multimedia domain (IMS) through an access network (UMTS; WLAN; GPRS; CDMA 2000), the device for use in, or in co-operation with, a subscriber server (HSS; AAA) of the access network holding authentication data for the user and accessible to the Multimedia domain (IMS), the device **characterised by** comprising:
- 5
- 10 - means for deciding that an implicit authentication between the user (UE) and the Multimedia domain (IMS) can take place based on a previous authentication of the user (UE) by the access network (UMTS; WLAN; GPRS; CDMA 2000), thus skipping the needs for an explicit authentication; and
  - 15 - means for instructing a serving entity (S-CSCF) in charge of authenticating the user (UE) in the Multimedia domain (IMS) that implicit authentication can take place.
2. The device of claim 1, wherein the means for deciding that an implicit authentication can take place includes means for determining the potential security of the signalling path to access the Multimedia domain through said access network.
- 20
3. The device of claim 1, wherein the means for instructing the serving entity that an implicit authentication can take place include means for indicating (Implicit Authentication) that the final decision is on the user's side (UE) which might force an explicit authentication.
- 25
4. The device of claim 1, wherein the means for instructing the serving entity that an implicit authentication can take place include means for indicating (Implicit
- 30

Authentication by network) that this is a final decision taken by the network and no explicit authentication can be carried out.

5. The device of claim 1, further including means (Implicit Authentication; Implicit Authentication by the network) for notifying the user's equipment that an implicit authentication of the user for accessing the Multimedia domain can be carried out by the network.  
5
6. The device of claim 1, wherein the means for deciding that an implicit authentication between the user (UE) and the Multimedia domain (IMS) can take place includes means for receiving a proposal of implicit authentication (SSO proposal) originated from the user's equipment (UE).  
10
7. The device of claim 3, further comprising means for receiving an indication (SSO enabled) originated from the user's equipment (UE) to confirm the acceptance of the implicit authentication proposed by the network.  
15
8. The device of claim 7, further comprising means for indicating (Implicit Authentication user-confirmed) to the serving entity (S-CSCF) in charge of authenticating the user in the Multimedia domain (IMS) that the user has confirmed the implicit authentication.  
20
9. The device of claim 8, further comprising means for providing additional authentication data to said serving entity (S-CSCF), said additional authentication data including at least one element selected from a group of elements comprising: authentication type; access information; and authentication timestamp.  
25
10. A user's equipment (UE) enabled to get access to a Multimedia domain (IMS) through an access network (UMTS; WLAN; GPRS; CDMA 2000), and arranged to carry out a first explicit Authentication procedure with the access network  
30

and a second explicit authentication procedure with the Multimedia domain (IMS), the user's equipment (UE) characterised by having means for processing at least one notification selected from a group of notifications including:

5

- a notification (Implicit Authentication; Implicit Authentication by the network) received from the Multimedia domain (IMS) indicating that an implicit authentication for the user can be carried out by the network; and

10

- a notification (SSO Proposal) proposed from the user's equipment (UE) towards the Multimedia domain (IMS) to carry out an implicit authentication between said user's equipment and Multimedia domain.

15 11. The user's equipment (UE) of claim 10, wherein the means for processing a notification received from the Multimedia domain (IMS) includes means for receiving and processing an indication (Implicit Authentication) that the final decision is on the user's equipment (UE) which might force an explicit authentication.

20

12. The user's equipment (UE) of claim 11, further comprising means for sending towards the Multimedia domain (IMS) an indication (SSO enabled) to confirm the acceptance of the implicit authentication proposed by the network.

25 13. The user's equipment (UE) of claim 12, further comprising means for providing additional authentication data towards the Multimedia domain (IMS), said additional authentication data including at least one element selected from a group of elements comprising:

30 authentication type; access information; and authentication timestamp.

14. The user's equipment (UE) of claim 10, wherein the means for processing a notification received from the Multimedia domain (IMS) includes means for receiving and processing an indication (Implicit Authentication by the network) that the implicit authentication is a final decision taken by the network and no explicit authentication can be carried out.
15. A method for authenticating a user (UE) accessing a Multimedia domain (IMS) through an access network (UMTS; WLAN; GPRS; CDMA 2000), the method comprising:
- a step of authenticating the user in the access network (UMTS; WLAN; GPRS; CDMA 2000) where the user accesses through, the access network having a subscriber server (HSS; AAA) with authentication data for the user and accessible to the Multimedia domain (IMS); and
  - a step of registering the user (UE) into the Multimedia domain (IMS);
- the method characterized by comprising:
- a step of deciding that an implicit authentication between the user (UE) and the Multimedia domain (IMS) can take place based on the previous authentication of the user (UE) in the access network (UMTS; WLAN; GPRS; CDMA 2000), thus skipping the needs for an explicit authentication; and
  - a step of instructing a serving entity (S-CSCF) in charge of authenticating the user (UE) in the Multimedia domain (IMS) that implicit authentication can take place.
16. The method of claim 15, further comprising a step of notifying from the Multimedia domain (IMS) (Implicit



Authentication; Implicit Authentication by network) to the user's equipment (UE) that implicit authentication of the user for accessing the Multimedia domain can be carried out.

- 5 17. The method of claim 15, wherein the step of deciding that an implicit authentication can take place includes a step of determining the potential security of the signalling path to access the Multimedia domain through said access network.
- 10 18. The method of claim 15, wherein the step of deciding that an implicit authentication can take place includes a step of proposing from the user's equipment (UE) towards the Multimedia domain (IMS) an implicit authentication to be carried out between said user's equipment and Multimedia domain.
- 15 19. The method of claim 15, wherein the step of instructing the serving entity that an implicit authentication can take place include a step of indicating (Implicit Authentication by the network) that this is a final decision taken by the network and no explicit authentication can be carried out.
- 20 20. The method of claim 15, wherein the step of instructing the serving entity that an implicit authentication can take place includes a step of indicating (Implicit Authentication) that the final decision is on the user's equipment which might force an explicit authentication.
- 25 21. The method of claim 20, further comprising a step of confirming (SSO enabled) from the user's equipment (UE) acceptance of an implicit authentication proposed by the network.
- 30 22. The method of claim 21, further comprising a step of indicating (Implicit Authentication user-confirmed) to

the serving entity (S-CSCF) in charge of authenticating the user (UE) in the Multimedia domain (IMS) that the user has confirmed the implicit authentication.

- 5 23. A serving entity (S-CSCF) in charge of authenticating a user (UE) in the Multimedia domain (IMS) when the user accesses thereto through an access network (UMTS; WLAN; GPRS; CDMA 2000) where said user had been previously authenticated, the serving entity (S-CSCF) characterized by comprising:
- 10 - means for receiving and processing instructions (Implicit Authentication; Implicit Authentication by the network) originated from the device of claim 1 indicating that an implicit authentication can take place based on the previous authentication of the user
- 15 (UE) by the access network (UMTS; WLAN; GPRS; CDMA 2000); and
- means for notifying (Implicit Authentication; Implicit Authentication by the network) to a user's equipment (UE) that an implicit authentication of the user for
- 20 accessing the Multimedia domain (IMS) can be carried out by the network.
24. The serving entity (S-CSCF) of claim 23, also comprising means for receiving an indication (SSO enabled) originated from the user's equipment (UE) of claim 12 to
- 25 confirm acceptance of an implicit authentication proposed by the network.
25. The serving entity (S-CSCF) of claim 23, further comprising means for receiving an indication (Implicit Authentication user-confirmed) originated from the device
- 30 of claim 8 indicating that the user has confirmed the implicit authentication.

- 5 26. The serving entity (S-CSCF) of claim 25, further comprising means for checking the matching of additional authentication data respectively received from the device of claim 9 and from the user's equipment of claim 13 in order to provide an extra security support.
- 10 27. The serving entity (S-CSCF) of claim 26, wherein said additional authentication data include at least one element selected from a group of elements comprising: authentication type; access information; and authentication timestamp.
- 15 28. The serving entity (S-CSCF) of claim 23, wherein the means for notifying the user (UE) that an implicit authentication can be carried out by the network includes means for indicating (Implicit Authentication by the network) the user (UE) that the implicit authentication is a final decision taken by the network and no explicit authentication can be carried out.
- 20 29. A Proxy entity (P-CSCF) intended to act as an entry point into the Multimedia domain (IMS) for users (UE) accessing thereto through an access (UMTS; WLAN; GPRS; CDMA 2000) network where the user had been previously authenticated, characterized by having means for processing at least one notification selected from a group of notifications including:
- 25 - a notification (Implicit Authentication; Implicit authentication by the network) sent towards the user's equipment (UE) to indicate that an implicit authentication of the user for accessing the Multimedia domain (IMS) can be carried out by the
- 30 network; and
- a notification (SSO Proposal) received from the user's equipment (UE) to propose an implicit authentication

towards the Multimedia domain (IMS) between said user's equipment and Multimedia domain.

- 5 30. The Proxy entity (P-CSCF) of claim 29 further comprising means for receiving an indication (SSO enabled) from the user's equipment (UE) accepting the implicit authentication proposed by the network.
- 10 31. The Proxy entity (P-CSCF) of claim 29 further comprising means for indicating (Implicit Authentication by the network) to the user (UE) that the implicit authentication is a final decision taken by the network and no explicit authentication can be carried out.
- 15 32. An interrogating entity (I-CSCF) querying a subscriber server (HSS; AAA-3GPP) in the Multimedia domain (IMS) about a user (UE) having accessed said Multimedia domain through an access network (WLAN; GPRS), the interrogating entity having means for receiving a registration request from the user, and means for acknowledging such registration towards the user, and characterized by comprising means for transmitting an indication (Implicit Authentication; Implicit authentication by the network) towards the user (UE) that an implicit authentication of the user for accessing the Multimedia domain (IMS) can be carried out.
- 20 33. The interrogating entity (I-CSCF) of claim 32 further comprising:
- 25 - means for receiving an indication (SSO enabled; SSO proposal) originated from the user's equipment (UE) to enable an implicit authentication; and
- 30 - means for transmitting such indication from the user's equipment towards at least one entity selected from a group of entities comprising the device of claim 1 and the serving entity (S-CSCF) of claim 23.

- 5 34. The interrogating entity (I-CSCF) of claim 32 further comprising means for transmitting towards the user (UE) an indication (Implicit Authentication by the network) that the implicit authentication is a final decision taken by the network and no explicit authentication can be carried out.